



Data Management at NCDDC

Sharon Mesick
Deputy Chief Scientist
National Coastal Data Development Center

Abstract

The National Coastal Data Development Center is NOAA's newest data center, providing Internet based discovery, display and delivery of coastal data from distributed sources. This presentation will focus on NCDDC's information technology infrastructure, which facilitates remote access to data collections maintained by a variety of Federal, State, Academic, and other organizations. Data collected and maintained by NCDDC for eco-system based management within the Gulf of Mexico, in collaboration with NMFS offices, will also be presented.



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NOAA Coastal Data Development Center Overview of Data Management Activities

Workshop on
**GIS Tools Supporting Ecosystem
Approaches to Management**

September 8-10 2004

Sharon M. Mesick



Presentation Overview

- About NCDDC
- Meeting Data Management Requirements
- Questions



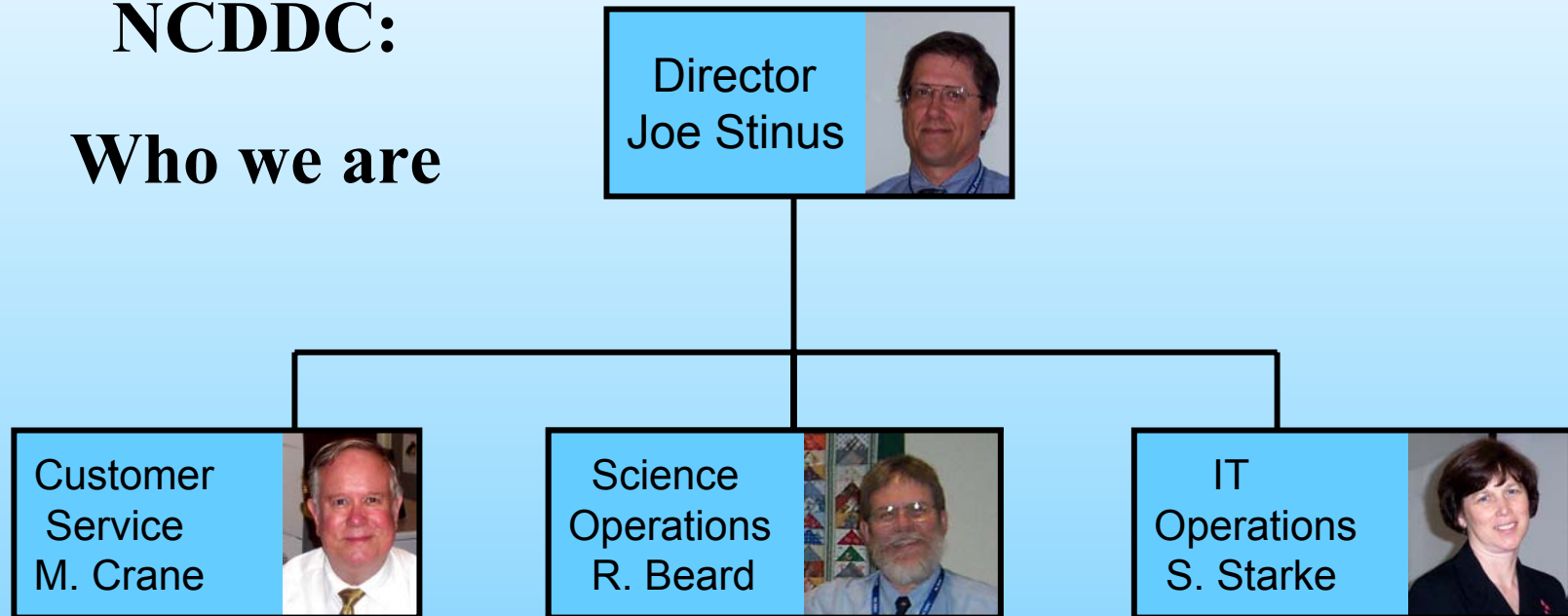
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NCDDC:

Who we are



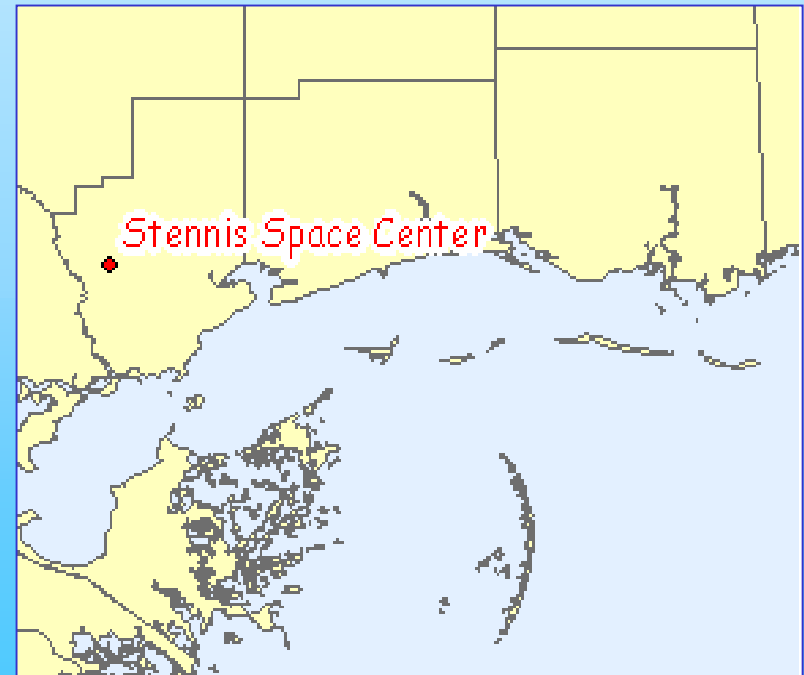
Total Personnel

Federal: 12 Contractor: 26



NCDDC: Location

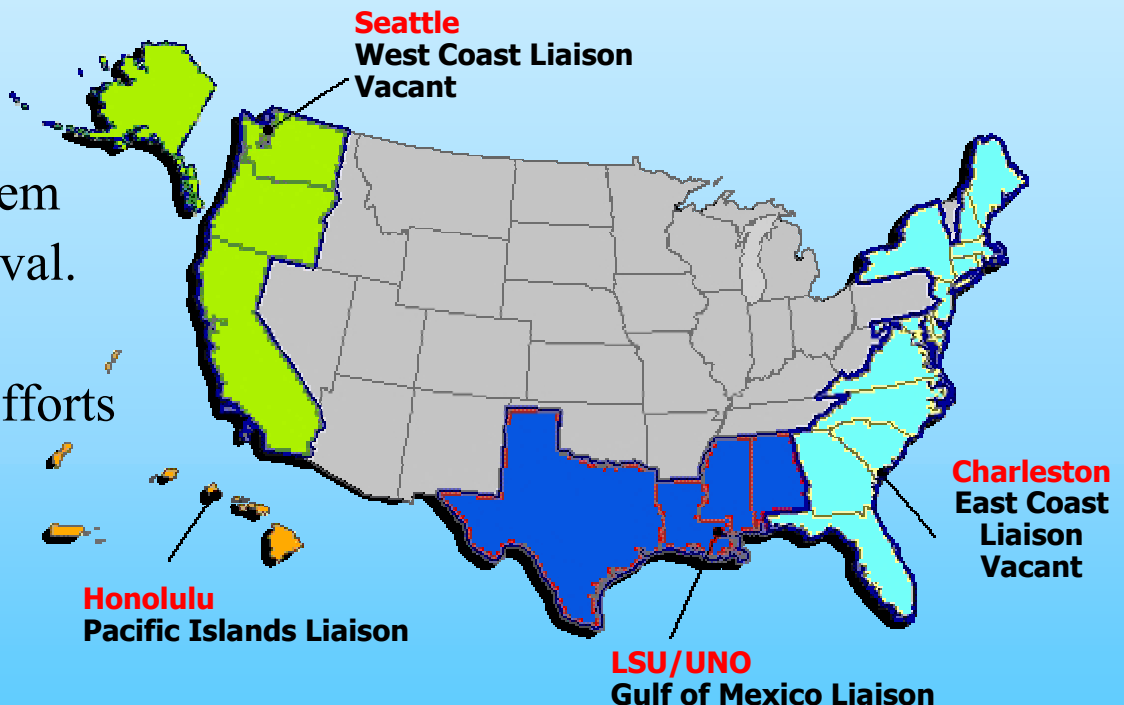
- Located at the Stennis Space Center
 - A unique ‘Federal City’
 - Home to more than 40 Federal & State Agencies
 - NOAA
 - NWS, NMFS, NESDIS, NOS
 - NASA, Navy, Coast Guard;
 - EPA, USGS;
 - Contractors & Vendors
 - Small Business Incubator;
 - Universities;
 - Many others . . .





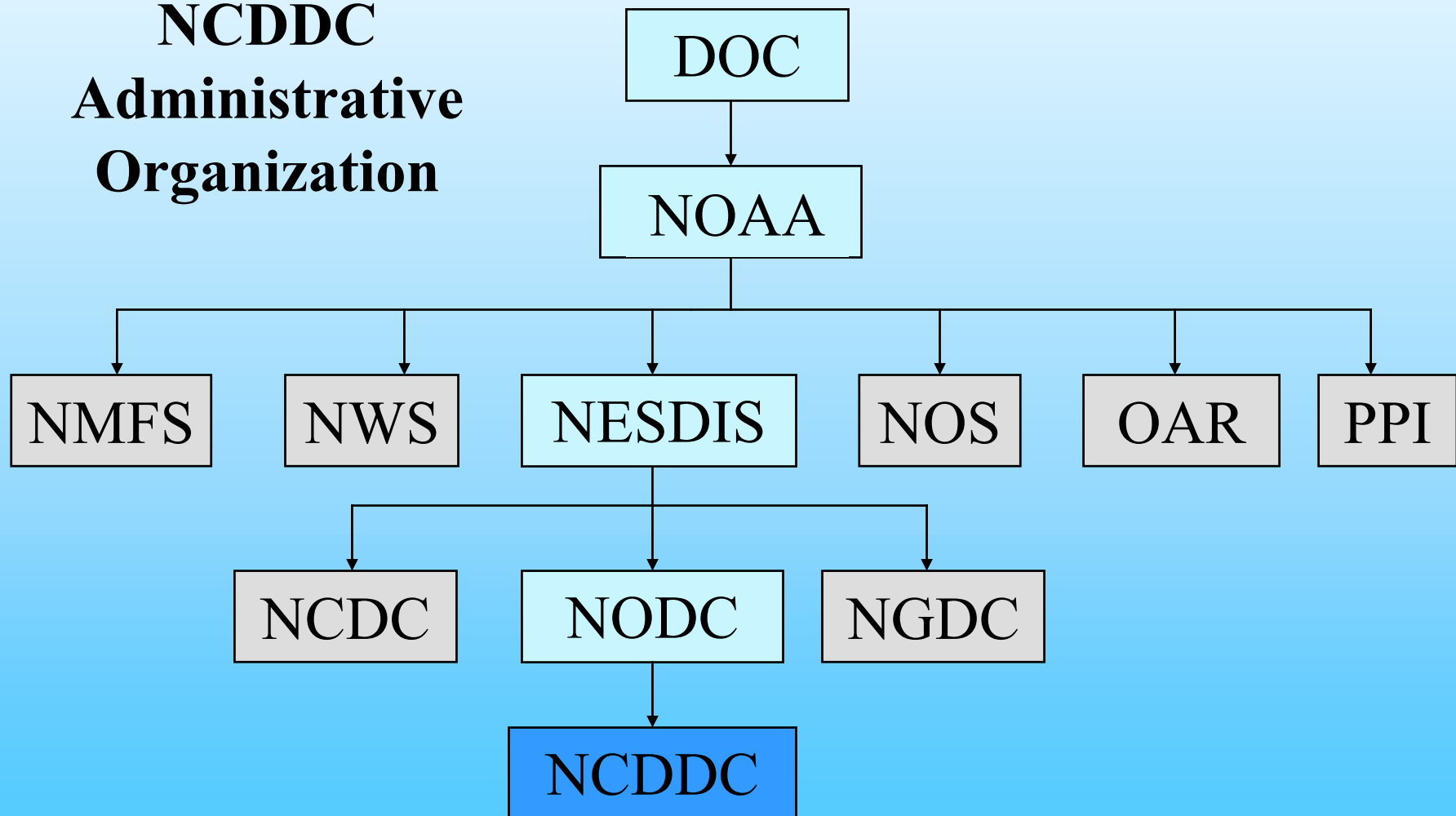
Regional Offices

- Represent NCDDC at regional meetings and workshops.
- Provide assistance in ecosystem data access, archival and retrieval.
- Facilitate data management efforts in each region.
- Sponsored partnerships, e.g., NCCOS-Charleston.





NCDDC Administrative Organization





Tactical Organization: NOAA Mission Goals

• Ecosystems



- 9 Programs



✓ Ecosystem Observing Program

• Climate

• Weather & Water

• Commerce & Transportation

• Organizational Excellence & Mission Support



NCDDC: Mission

- To support ecosystem stewardship and to provide access to the Nation's coastal and marine data resources

NCDDC: Capabilities

- Practical implementation of Data Management services
 - Dynamic web capabilities and services
 - Metadata management via training, creation and publication
 - Software development to facilitate data access and retrieval
 - Geospatially enabling data for display, query and analysis

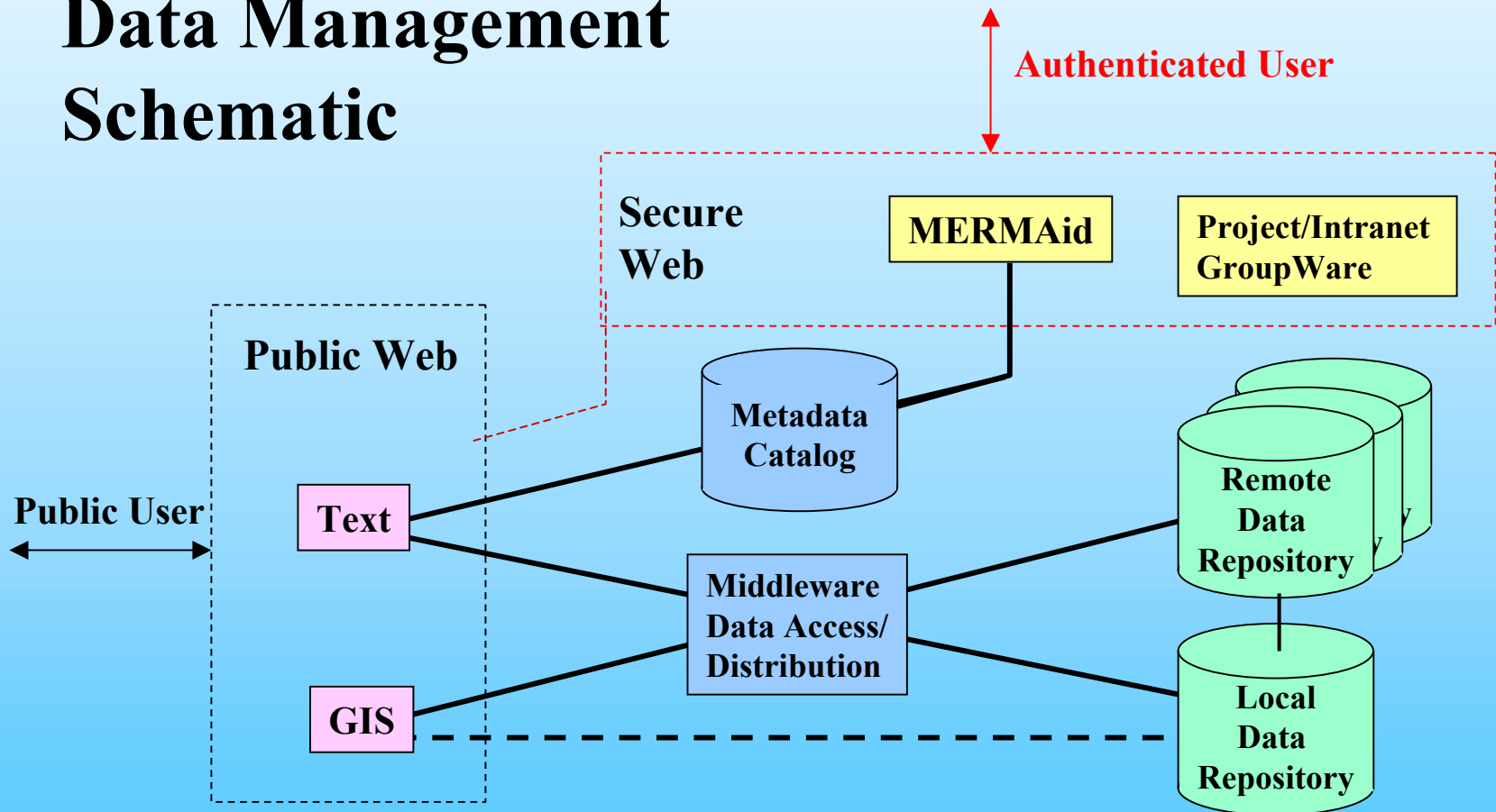


Presentation Overview

- About NCDDC
- Meeting Data Management Requirements
 - Examples
 - Future Directions
 - Data Summary
- Questions

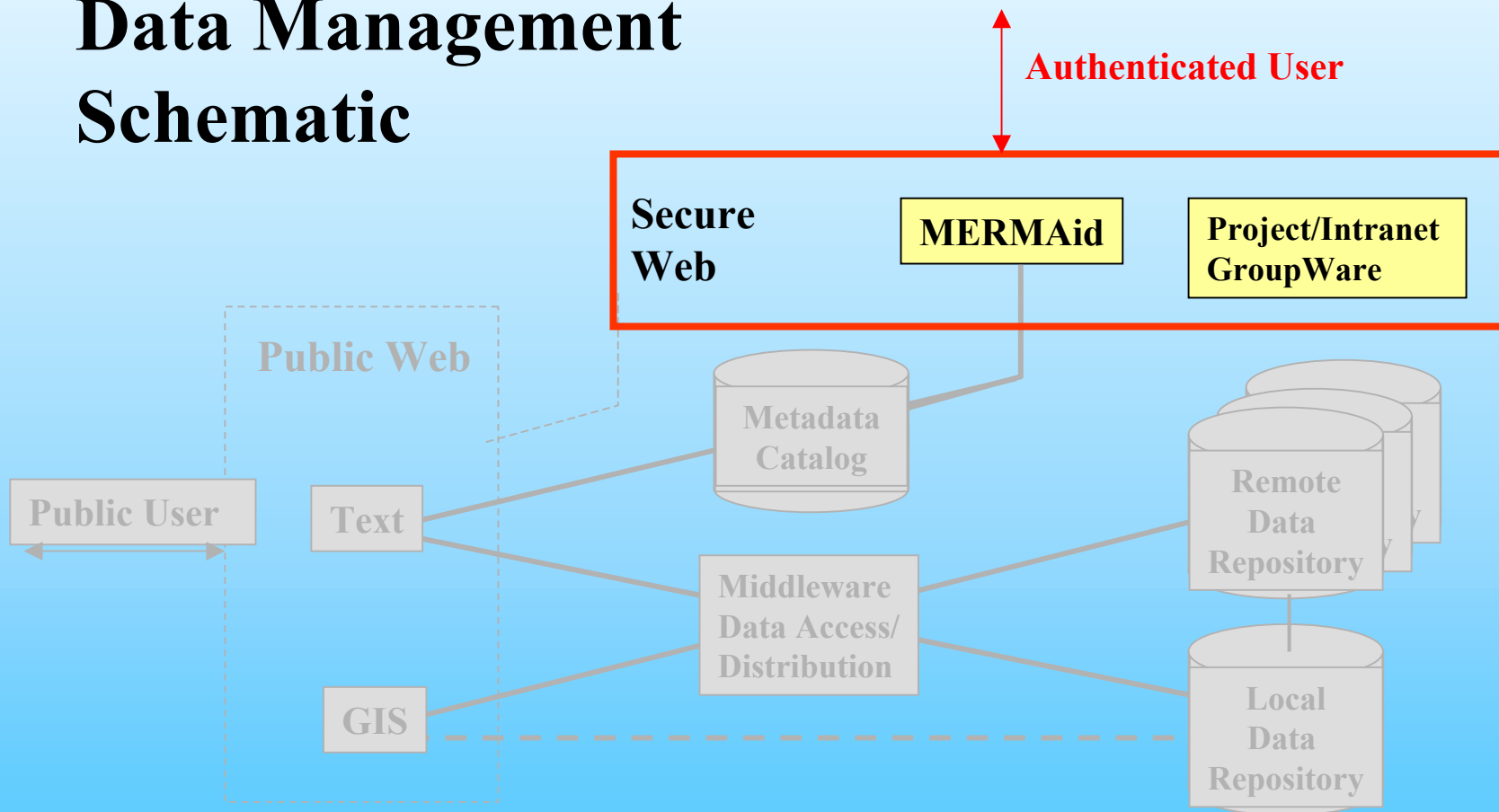


Data Management Schematic





Data Management Schematic





Project Organization and Management

The screenshot shows a web browser window titled "OE Content Management System - Working Groups - Microsoft Internet Explorer". The browser's address bar and menu bar are visible. The main content area displays the "ocean explorer/Explorations" logo and a search bar. Below the logo, there are tabs for "welcome", "members", "calendar", and "maps". A user profile section shows "smesick" with links for "my folder", "my preferences", "undo", and "log out". The breadcrumb trail indicates the current location: "you are here: home » working groups". The main content area is titled "Working Groups" and includes a description: "This is a central access point to the various working groups. Local roles are set within each group to control access by community members." Below this, there is a list of working groups with their descriptions:

- Video and Photo**: Contains documents and files pertinent to the work of the IPT Video and Photo Working Group
- Digital Atlas**: Contains documents, files, etc. pertinent to the OE Pilot Project/Digital Atlas Working Group
- Metadata**: Contains documents and other pertinent information to support the Metadata Working Group.
- Data Manager**: A repository for the Data Manager Working Group.
- Data Management Process**: Contains documents, files, etc. for the Data Management Process Working Group
- Cruise Reports**: Contains documents, files, etc. pertinent to the Cruise Reports Working Group

The left sidebar contains a "navigation" section with links to Home, Library Management, Working Groups, Cruise Reports, Data Management Process, Data Manager, Digital Atlas, Metadata, and Video and Photo. Below this is a "recent items" section listing recent meetings and workshops.



MERMAid: Metadata Creation and Management

Tools - Microsoft Internet Explorer

Address: <http://www.ncddc.noaa.gov/Metadata/Tools>

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Home < Metadata Resources < T
About Us | Services | Me
References

Metadata Enterprise Resource

NCDDC provides individuals, publish me Metadata allows us metadata any way t personnel) (1) user-c manage the indivi tracking; a FGDC comp into and m

In the nea metadata will play leverage t discovery metadata features.

Additional Tools

NOTE: Some links on this page take y

NCDDC Application Server

Tools - Microsoft Internet Explorer

Address: <https://mermaid.ncddc.noaa.gov>

Manage Data XML View HTML View Text View Undo

Range of Dates/Times at
</training/students/stu00/exercises/hawaii/idinfo/timeperd/timeinfo/rngdates>

Saved changes. (2003-05-21 15:55)

For data validation, mouse over the element names marked in red.

✎ - Mandatory element ✎ - Mandatory-if-applicable element ✎ - Optional element

Name	Value	Format	Description
Beginning Date	20010901	date	The first year (and ally month, or and day) of the
Beginning Time			st hour (and ally minute, or minute and second) of the day for the event.
Ending Date	20010815		
Ending Time			

Validation Instructions: The date 20010901 is chronologically ahead of the date 20010815.

Suggested Values/Formats: Unknown free date (YYYY, YYYYMM, YYYYMMDD)

Range of Dates/Times - Microsoft Internet Explorer

Beginning Date

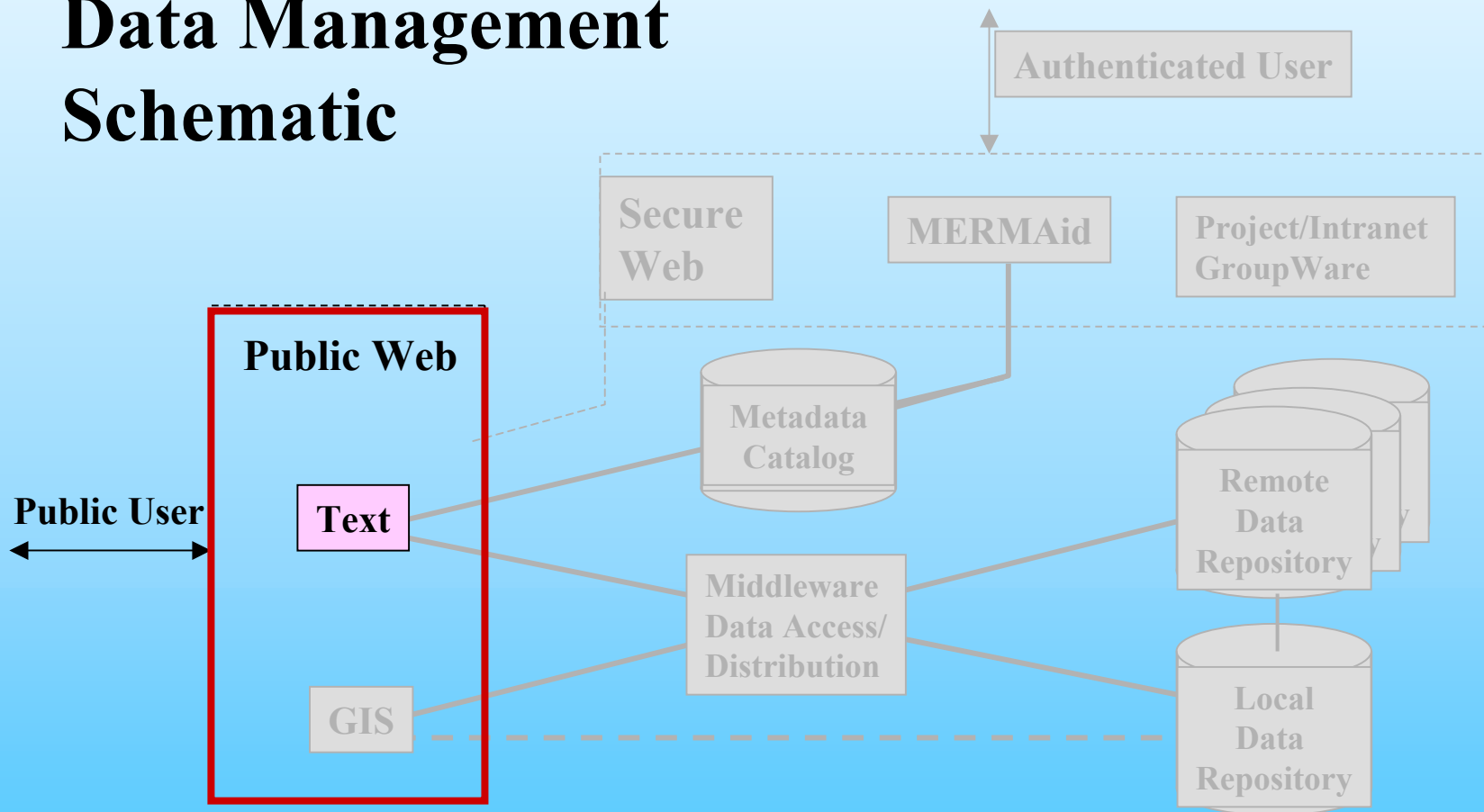
Beginning Date -- the first year (and optionally month, or month and day) of the event.
Type: date
Domain: "Unknown" free date
Short Name: begdate

Save Changes and Validate Save Changes as In Progress

Done Internet



Data Management Schematic





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Internet Accessible Capabilities

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Home < Projects

About Us | Services | Metadata Resources | Regional Offices |
HABSOS | Ocean Exploration | Coastal Risk Atlas | Coastal Eco



There are a variety of coastal and ocean observing systems that routinely monitor the coastal environment. These include federal, state, or managed observing systems, and national in scope as well as systems that focus only on a particular coastal region, port, or estuary. This site provides a view of real-time and recent data generated by these systems through the Internet Map Server and provides links to information about these systems. The site also provides information on the development of an Integrated Ocean Observing System (IOOS). The IOOS integrates existing systems with an increased number of regionally managed in situ and remote observing systems to improve public safety, monitor the health of our ecosystems, and enhance our understanding of long term climate trends.



In "The State of the Nation's Ecosystems" report, the Heinz Center identified harmful algal blooms (HABs) as one of the core indicators to the health of the nation's ecosystems. Alarming frequency, extent, and severity of HAB occurrences can have significant economic and ecological effects, there are no consistent data to validate this concern. HABSOS is an integrated information and communication system for managing HAB data, events, and effects.



United States natural disaster losses are estimated to be between \$10 billion and \$20 billion annually, much of which is concentrated along the nation's coasts. Communities that undertake hazard vulnerability assessments and implement mitigation measures experience significant economic, environmental, and quality of life benefits. The Coastal Risk Atlas (CRA) is a project that will identify and provide access to coastal data needed to perform comprehensive vulnerability assessments using techniques developed and proven by the NOAA Coastal Services Center.



Coastal ecological systems are units – such as estuaries, coral reefs, islands, or regions like the Gulf of Mexico – within which all organisms interact among themselves and with the physical environment. The U.S. coastal zone encompasses more than 6,400 miles, and is divided into seven biogeographic regions comprising thousands of marine and coastal ecosystems. Studies of these ecosystems have produced massive amounts of data, most of which are currently inaccessible. The Coastal Ecosystem Program is designed to make these data readily accessible through the NCDDC data portal, GIS-mapping, and linkage to partner organizations throughout the coastal science and management community.

NCDDC Coastal EcoSystems Program - Mozilla Firefox

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http://www.ncddc.noaa.gov/Habitat

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COASTAL ecosystems

Home

Go to 2004 Gulf of Mexico Hypoxia Watch

Advancing applied coastal science through efficient access to the coastal ecological data record

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- Accomplishments
- Projects
- GIS Mapping
- Data Search**
- Forum Community
- Library
- Program Links
- Hypoxia Watch
- Site Map
- Disclaimer



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Data Discovery and Delivery

NCDDC | Gulf of Mexico Search - Netscape

http://portal.ncddc.noaa.gov/

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Need help? [Click here for Help File](#)

Theme

Theme Keywords: All

Enter any extra Theme keywords you would like

SEAMAP

Time

Please use the following date format: YYYY, YYYY/MM, or YYYY/MM/DD

Results 1 - 5 of 5.

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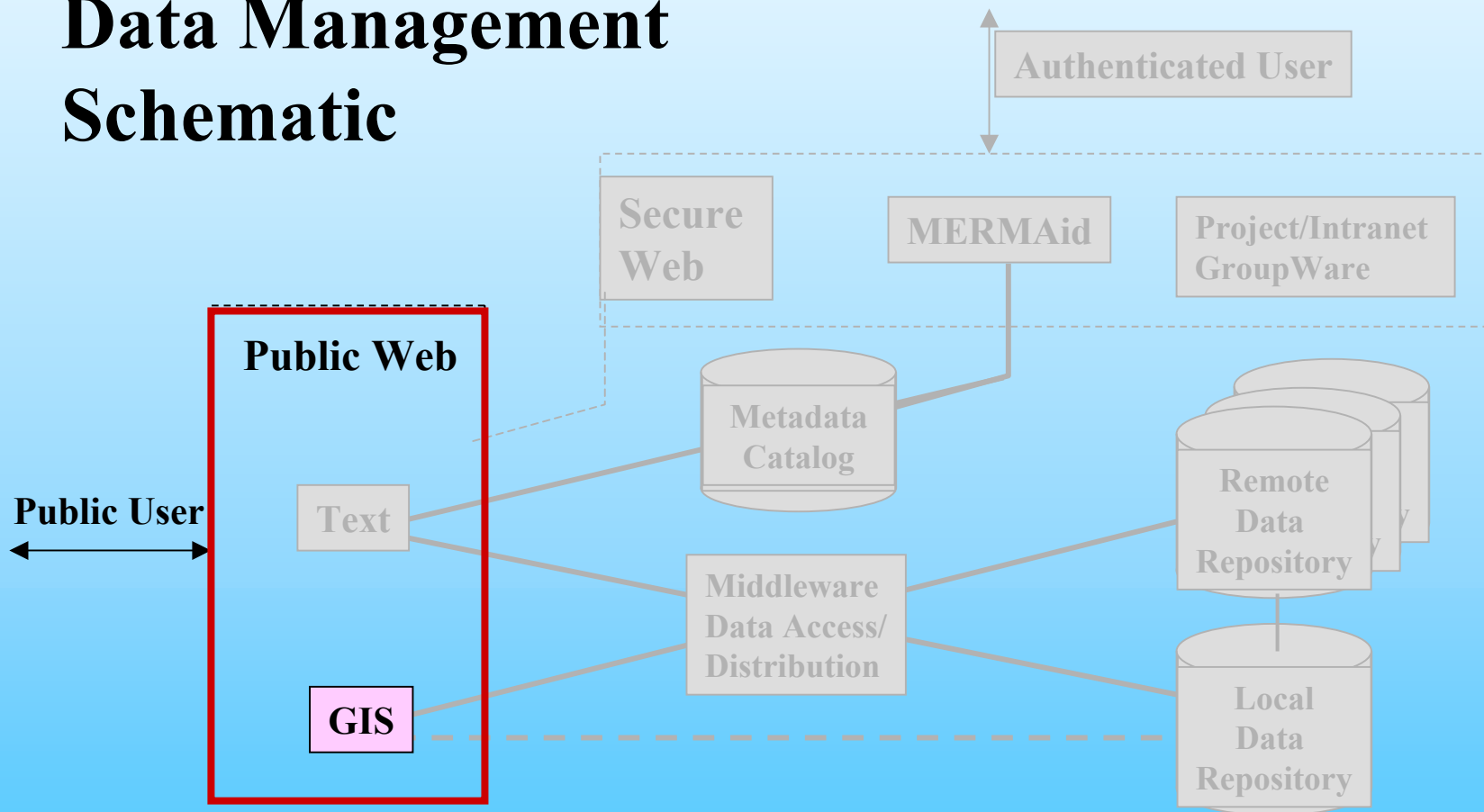
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Map created at National Coastal Data Development Center

0 85mi



Data Management Schematic





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Internet Accessible Capabilities

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HABSOS | Ocean Exploration | Coastal Risk Atlas | Coastal Eco



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NCDDC Coastal EcoSystems Program - Mozilla Firefox

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Accomplishments

Projects

GIS Mapping

Data Search

Forum Community

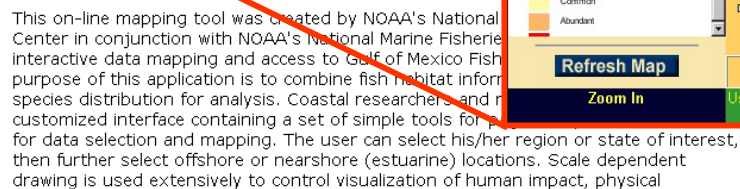
Library

Program Links

Hypoxia Watch

Site Map

Disclaimer



http://www.ncddc.noaa.gov/Habitat/GIS_mapping/ECOSYSTEM_Description_Layers

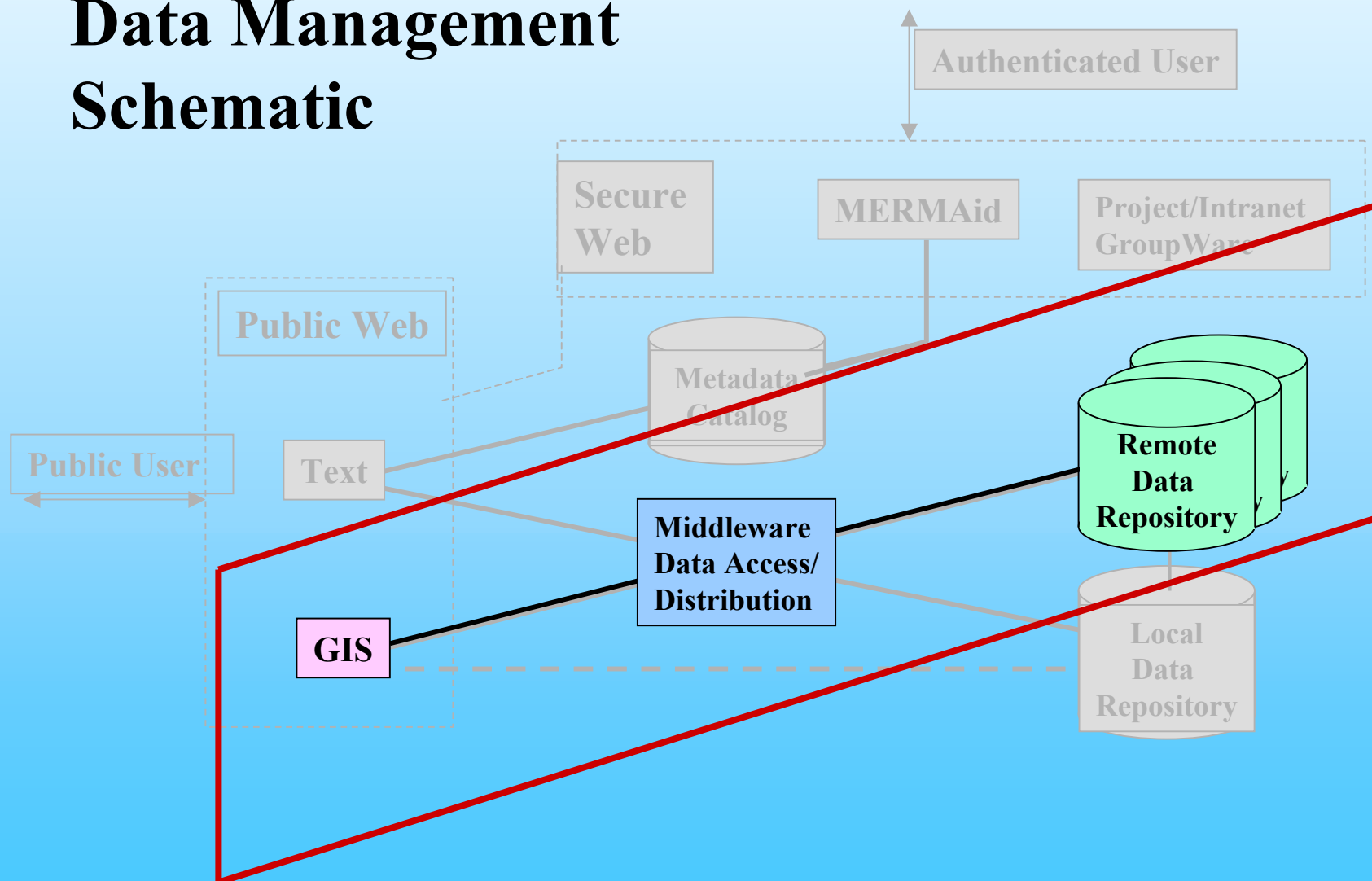
mapped in relationship to the available habitat information.

Description

Launch Map



Data Management Schematic





Coastal Ocean Observing Systems

- Partners: NDBC, GoMOOS, COMPS, CO-OPS, TABS, TCOON, others...
- Data Sets
 - Surface Marine Weather
 - Chemical, Bio-optical
 - Physical Ocean Measurements

http://www.ncddc.noaa.gov/COOS/GIS_Mapping/COOS_Description_Layers



Data Retrieval and Aggregate Processing



GoMOOS DoDs Server
(netCDF files)

NCDDC
Middleware

The software collects
all data hourly

Automated Archive
Client (NODC)

- The software collects all data weekly;

- Data stored in NetCDF format, subset by date

NCDDC Spatial
Data Model

Data are converted to
a universal format

Automated Mapping
Client

- Parses the data;

- Populates the SDE table

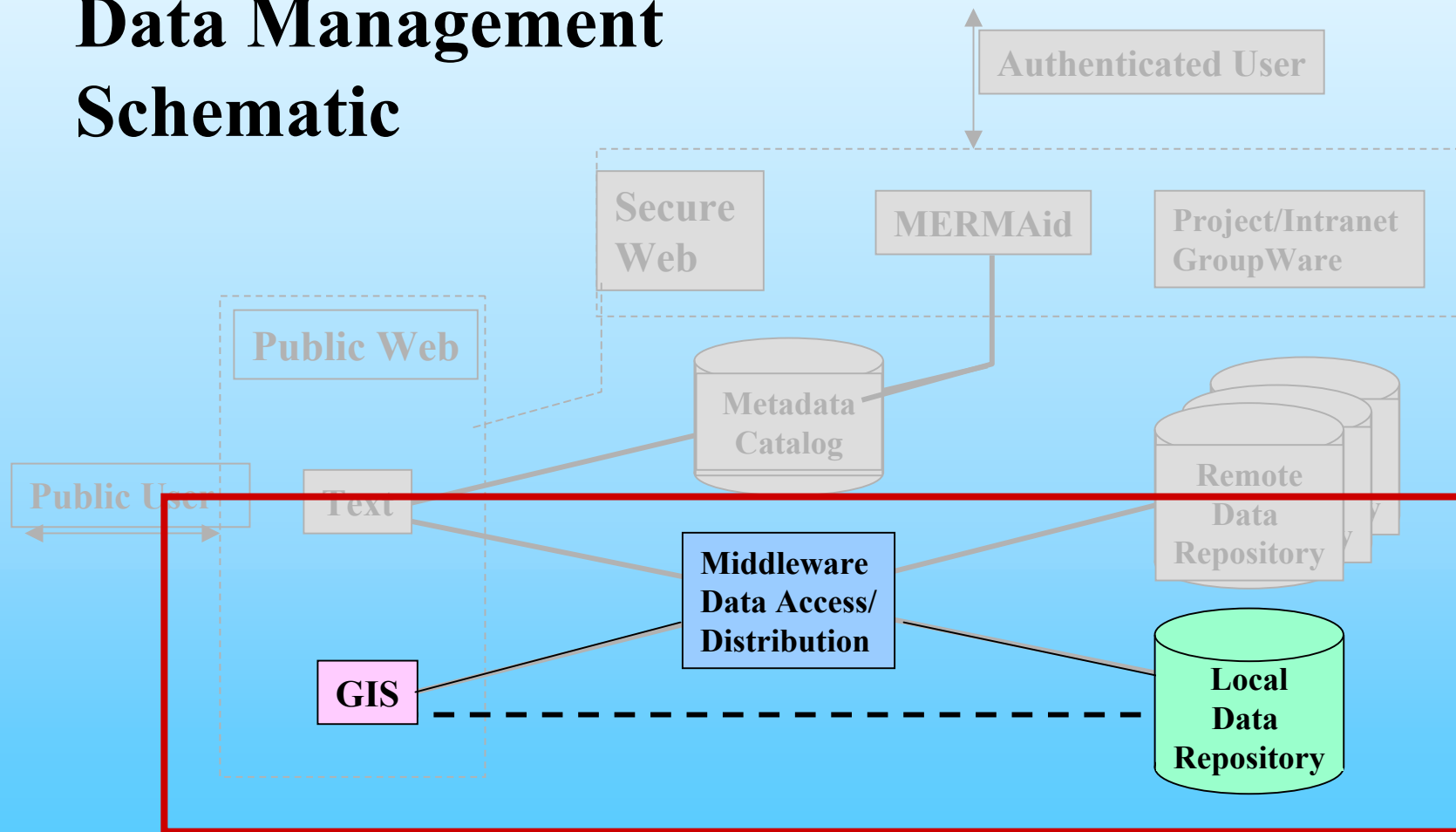
- Transforms to shapefile



IMS points to SDE



Data Management Schematic





Harmful Algal BloomS Observing System

- Partners: More than 30 Federal, State, Academic, and Industry Organizations in the US and Mexico
- Data Sets
 - Karenia Brevis cell count data for years 1996, 1997 & 2000
 - Florida, Alabama, Mississippi, Louisiana & Texas
 - Karenia Brevis toxicity data for 2001-2002
 - County of Veracruz, Mexico
 - Aquaculture sites, Shellfish beds, Oyster leases, artificial reefs
 - Beach access points, boat launches, marinas
 - Bathymetry, administrative boundaries, rivers, other framework layers

http://www.ncddc.noaa.gov/habsos/Mapping/HABSOS_Description_Layers

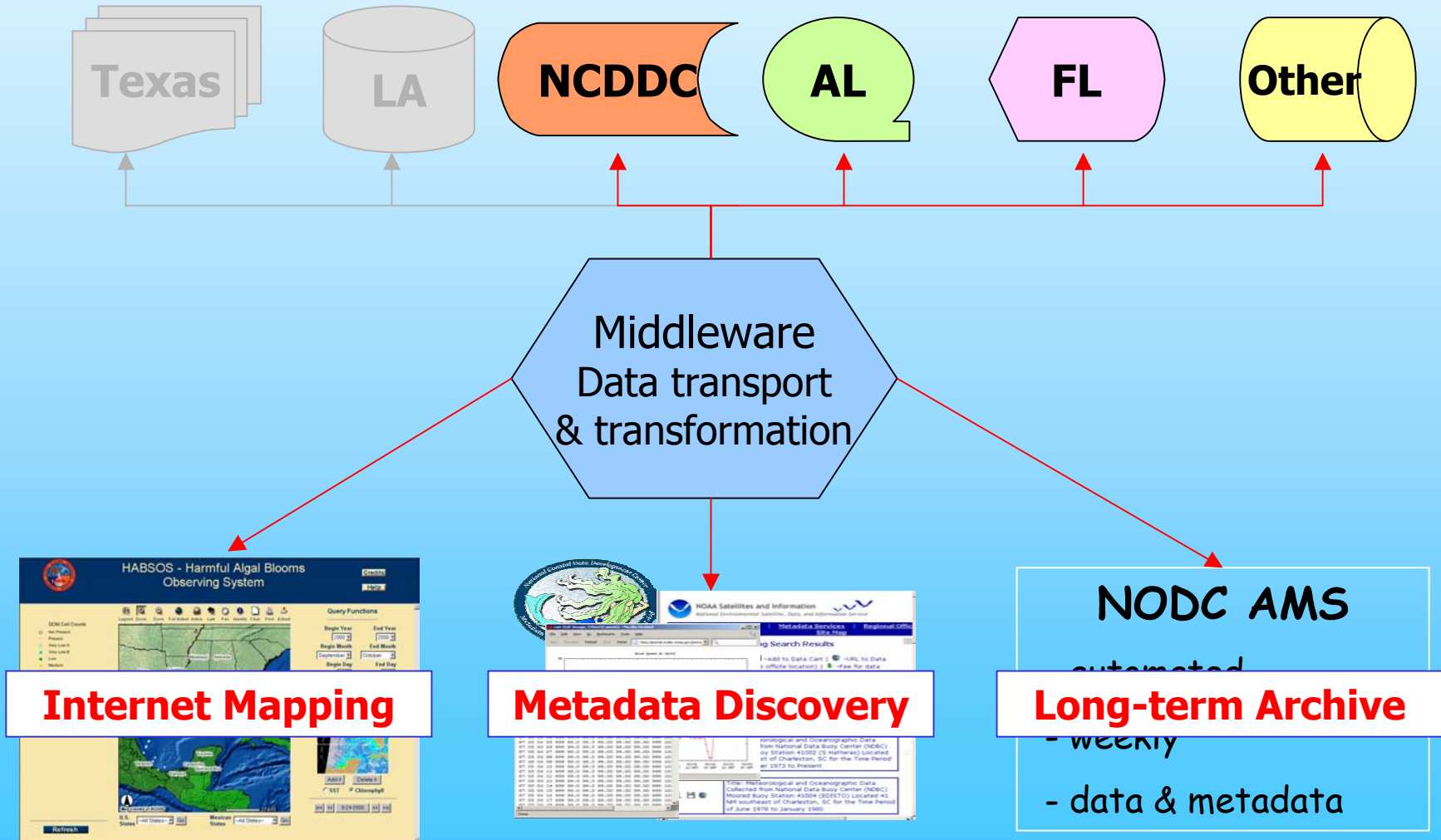


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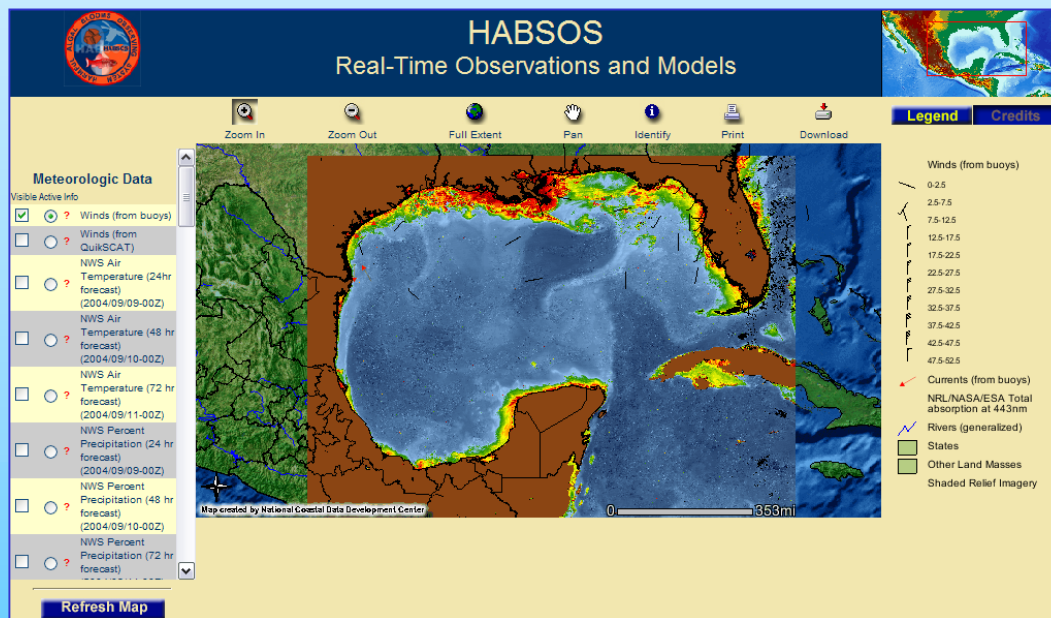
Ongoing Development





HABSOS Real-Time Observations & Models

- Partners: EPA, NASA, NRL-SSC, NOAA



Data Sets:

- Meteorological
- Oceanographic
- Imagery products



On-going Development

- Building the metadata catalog
 - Training, grants & contracts
- Connecting to additional data sources

Future Directions

- Building metadata on-the-fly
- Generating fused geospatial data products on-the-fly
- Application services



Data Summary

- Map Services
 - 508 compliant map services list all available data
 - FGDC metadata for all geospatial data
 - Most data downloadable
- Metadata catalog search
 - Geospatial, temporal &/or keyword search
 - Web link to data source
 - Many data sets downloadable from source



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<http://www.ncddc.noaa.gov>
National Coastal Data Development Center
Stennis Space Center, Mississippi
228-688-2936

